

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of:)	
)	
Expanding Flexible Use of the 3.7 to 4.2)	GN Docket No. 18-122
GHz Band, <i>et al.</i>)	
)	RM-11791
)	RM-11778
)	

COMMENTS OF AT&T

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AT&T Services, Inc., on behalf of the subsidiaries and affiliates of AT&T Inc. (collectively, “AT&T”), hereby submits the following comments in response to public notice DA 19-385 (“*Public Notice*”) in the above-captioned proceeding.¹ The *Public Notice* solicits focused additional comment regarding three recent *ex parte* filings: (i) an AT&T *ex parte* raising technical and band plan issues; (ii) a proposal by ACA Connects – America’s Communications Association (“ACA”), Competitive Carriers Association (“CCA”), and Charter Communications, Inc. (“Charter”) to create a national fiber network to replace a segment of C-band usage and free more spectrum for flexible terrestrial use; and, (iii) a study by Dr. Jeffrey Reed filed by the Wireless Internet Service Providers Association (“WISPA”), Google LLC (“Google”), and Microsoft Corp. (“Microsoft,” and, with WISPA and Google, “BAC”) regarding point-to-multipoint (“P2MP”) use of the C-band.

¹ Wireless Telecommunications Bureau, International Bureau, Office of Engineering and Technology, and Office of Economics and Analytics Seek Focused Additional Comment in 3.7-4.2 GHz Band Proceeding, *Public Notice*, GN Docket No. 18-122, RM-11791, RM-11778, DA 19-385 (July 19, 2019).

I. INTRODUCTION AND SUMMARY

As parties and regulators have unambiguously recognized, this C-band reallocation proceeding is crucial to position the U.S. to retain its leadership role in wireless services generally, and 5G deployments specifically, and therefore is critical to maintaining U.S. leadership in the global economy broadly.² In furtherance of that effort, this *Public Notice* seeks comment on three different proposals to more efficiently utilize C-band spectrum resources, including:

- AT&T's *ex parte* proposing a partitioning of the C-band that would allow for more intensive use of the spectrum and highlighting ways in which even greater efficiency could be pursued;³
- A novel ACA/CCA/Charter proposal to utilize C-band spectrum auction revenues to fund the deployment of a fiber network infrastructure designed to provide an alternative distribution system for media content currently using C-band FSS transmission services;⁴ and
- A BAC proposal to introduce P2MP services into the FSS portion of the C-band sharing on a co-channel, co-primary basis.⁵

² See, e.g., Expanding Flexible Use of the 3.7 to 4.2 GHz Band, GN Docket 18-122, FCC 18-91 at ¶¶3-9 (rel. July 13, 2018); The Global Race to 5G Spring 2019 Update, CTIA-The Wireless Association (Spring 2019), *available at*: <https://api.ctia.org/wp-content/uploads/2019/04/The-Global-Race-to-5G-Spring-2019-Update.pdf> (last visited August 6, 2019)..

³ *Public Notice* at 4-5; see also Letter from Henry Hultquist, Vice President, Federal Regulatory, AT&T Services, Inc., to Marlene Dortch, Secretary, FCC, GN Docket No. 18-122 (filed May 23, 2019) (“AT&T May 23 Ex Parte”); Letter from Raquel Noriega, Director, Federal Regulatory, AT&T Services, Inc., to Marlene Dortch, Secretary, FCC, GN Docket No. 18-122 (filed June 6, 2019) (“AT&T June 6 Ex Parte”);

⁴ *Public Notice* at 4-5; see also Letter from Ross Lieberman, ACA, Alexi Maltas, CCA, and Elizabeth Andrion, Charter, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 2, 2019) (“ACA Coalition Proposal”); Letter from Pantelis Michalopoulos, Counsel for ACA, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 9, 2019), Attachment (“*Cartesian Study*”).

⁵ *Public Notice* at 4-5; see also Letter from Wireless Internet Service Providers Association, Google LLC, and Microsoft Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed July 15, 2019), Attachment (“*Reed Study*”).

Precisely because mid-band opportunities are so few, sound spectrum policy by the Federal Communications Commission (“Commission” or “FCC”) requires substantial due diligence to ensure that potential reallocations of mid-band spectrum from non-wireless to wireless use —like what is being considered here regarding the C-band—are not inadvertently squandered, while simultaneously recognizing the need to protect critical incumbent uses of the band, such as WarnerMedia’s use of C-Band services for video programming distribution and mobile production. AT&T therefore commends the Commission for its thorough work—including this *Public Notice*—to examine all possible options to free additional mid-band spectrum for broadband mobile services.

As an initial matter, there is universal recognition that mid-band spectrum, like the C-band, will be vital to 5G deployment in the U.S., and therefore integral to maintaining U.S. leadership in the wireless global economy. Specifically, the Administration, the Commission, and the industry have each recognized that, while low-band spectrum “can be leveraged for coverage” and millimeter wave bands can be used “for applications requiring very high data rates,” mid-band spectrum is “highly sought after for [its] ability to offer both high data rates and good coverage, thus bridging the gap between low bands and high bands.”⁶ The shortage of

⁶ “Emerging Technologies and Their Expected Impact on Non-Federal Spectrum Demand,” Executive Office of the President of the United States, Office of Science and Technology Policy at 63 (May 2019). *See, e.g.*, “Facilitate America’s Superiority in 5G Technology,” (Sept. 28, 2018), available at: <https://www.fcc.gov/5G> (last visited June 3, 2019) (“Mid-band spectrum has become a target for 5G buildout given its balanced coverage and capacity characteristics”); “The Growing Need for Mid-Band Spectrum,” CTIA-The Wireless Association (June 15, 2018), available at: <https://www.ctia.org/news/the-growing-need-for-mid-band-spectrum> (last visited June 3, 2019) (“Swaths of mid-band spectrum are essential to building robust 5G networks, thanks to their ability to provide a mix of coverage and capacity.”); Layton, Roslyn, “Mid Band Spectrum Is the Next Critical Piece to Timely 5G Deployment” (May 1, 2019), available at: <https://www.forbes.com/sites/roslynlayton/2019/05/01/mid-band-spectrum-is-the-next-critical-piece-to-timely-5g-deployment/#5f7d77b51922> (last visited June 3, 2019) (referring to mid-band

available mid-band spectrum—and the crucial need for mobile mid-band allocations—resulted in extraordinary measures like RAY BAUM’S Act, which required NTIA to identify 155 MHz of Federal spectrum for potential reallocation to licensed commercial use.⁷

From a demand perspective, Ericsson and others have suggested that the optimal channel size for 5G in this band is a contiguous TDD channel of 100 MHz or more.⁸ That suggests the need for a substantial amount of mid-band spectrum in the near term. Unfortunately, mid-band spectrum is already densely populated with incumbent users in the U.S. and existing allocations cannot satisfy carrier needs:

- Although rules for the Citizen’s Broadband Radio Service (“CBRS”) in the 3.5 GHz band have been finalized and portions of that band will be auctioned,⁹ CBRS is subject to power limitations and technical rules designed for small-cell, localized deployments rather than the broad coverage mid-band would otherwise make possible. In addition, the Spectrum Access System (“SAS”) requirements and small license areas will constrain the deployment of commercial 5G systems using CBRS spectrum.
- Moreover, although the Commission has recently approved an overlay auction and eliminated educational use requirements for the 2.5 GHz Educational Broadband Service (“EBS”) band,¹⁰ that band is already licensed in virtually all substantially populated areas and is subject to long term leases primarily involving Sprint. Indeed, the amount of unencumbered spectrum that will be available at auction—and the areas where such

as “the so-called Goldilocks band for its ideal mix of technical properties”); Dano, Mike, Light Reading, “Absence of Mid-Band Spectrum Clouds Trump’s 5G Proclamations” (Apr. 12, 2019), available at: <https://www.lightreading.com/mobile/5g/absence-of-mid-band-spectrum-clouds-trumps-5g-proclamations-/d/d-id/750811> (last visited June 3, 2019) (“The ‘Real 5G’ is going to flourish in what we now call mid-band spectrum, between 2.5GHz and 4.2GHz”).

⁷ Repack Airwaves Yielding Better Access for Users of Modern Services Act of 2018, H.R. 4986 at §703 (115th Cong. 2018) (“RAY BAUM’S Act”).

⁸ Ericsson, for example, has noted that large contiguous blocks (80-100 MHz per operator) would be optimal for 5G in this band. See Comments of Ericsson, GN Docket No. 18-122, RM-11791, RM-11778 at 10, 17-18 (Oct. 29, 2018).

⁹ Promoting Investment in the 3550-3700 MHz Band, *Report and Order*, 33 FCC Rcd 10598 (2018).

¹⁰ Transforming the 2.5 GHz Band, *Report and Order*, FCC 19-62 (rel. July 11, 2019).

spectrum will be available—are currently unsuited for anyone other than Sprint to use the EBS band to deploy wide area 5G services.

- Finally, all of the other mid-bands under consideration offer only limited capacity and are still in a gestational regulatory state. Although AT&T is hopeful that some or all of those bands will ultimately result in additional mid-band resources for commercial flexible use, the timeline and capacity will not likely compare favorably to the potential that exists for the C-band to provide large amounts of mid-band spectrum into new 5G network deployments on a timely basis.

In a nutshell, the C-band represents the nation’s single greatest opportunity to create large, contiguous blocks of mid-band spectrum suitable for 5G in the near term, and therefore this proceeding must be a keystone in the Commission’s overall spectrum strategy.

Consistent with this philosophy, and as discussed in further detail below, the FCC should accept AT&T’s technical recommendations on partitioning the C-band between FSS and flexible use services. And, although the ACA/CCA/Charter proposal reasonably asks whether there are conditions under which incumbent users such as WarnerMedia would deem fiber to be an operational and economic substitute for C-band FSS, the proposal itself raises weighty legal, technical, and financial questions. Finally, the Commission should not accede to the BAC’s request for free C-band spectrum. P2MP providers will have the opportunity, like mobile wireless carriers and all other interested parties, to acquire C-band spectrum at auction or through the secondary market.

II. THE AT&T BAND PLAN PROVIDES FOR THE MOST EFFICIENT AND EFFECTIVE USE OF C-BAND SPECTRUM BY BOTH INCUMBENTS AND NEW ENTRANTS

AT&T recently undertook an in-depth evaluation of the C-Band Alliance (“CBA”)¹¹ technical proposal¹² and offered a number of refinements to optimize the proposed band plan for both FSS incumbents and new mobile broadband entrants. One key finding from AT&T’s analysis was that the CBA plan created unnecessary coordination obligations impairing the flexible use spectrum and allowed too much spectrum to remain fallow. AT&T therefore proposed that the Commission should designate most of the spectrum reallocated for terrestrial mobile 5G use as “unrestricted,”¹³ thereby allowing terrestrial mobile licensees to deploy facilities free of any FSS coordination obligations.¹⁴ The Commission could then create an “adjacent license” band, which would lie between the spectrum reallocated for unrestricted mobile terrestrial 5G use and any remaining FSS spectrum, where terrestrial users would be

¹¹ The CBA is “a consortium of satellite operators with four founding members: Intelsat, SES, Eutelsat and Telesat, which . . . account for virtually all of the operational C-Band satellite downlink service in the continental United States.” Letter from Jennifer D. Hindin, Counsel for the CBA, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (Oct. 9, 2019).

¹² CBA’s proposal has generally been described in a number of filings in GN Docket No. 18-22. *See, generally, id.*; Comments of the C-Band Alliance, GN Docket No. 18-122 at 9 (filed Oct. 29, 2018); Reply Comments of the C-Band Alliance, GN Docket No. 18-122 (filed Dec. 7, 2018) (including Technical Annex as Exhibit); Letter from Jennifer D. Hindin, Counsel for the C-Band Alliance, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket No. 18-122 (Apr. 9, 2019) (including C-Band Alliance Transition Implementation Process as Exhibit).

¹³ As the *Public Notice* implicitly recognizes, AT&T’s use of “Unrestricted” was intended to be relative, not literal, and the actual licenses will be only “largely unrestricted.” *Public Notice* at 4. The “unrestricted” licensees will still need to comply with relevant service rules, among other things. The key distinction, however, is that deployment under those licenses would not be restricted by the need to engage in pre-deployment coordination with incumbent FSS licensees in the band.

¹⁴ *AT&T May 23 Ex Parte* at 3.

required to either employ defined mitigation measures or coordinate in advance of deployment with nearby earth stations.¹⁵ This improves upon the CBA band plan in two respects—it eliminates unnecessary coordination requirements that could delay, impede, or increase the cost of terrestrial network deployment, and it provides for full use of the entire band, without any fallow guard band. In turn, AT&T’s plan would maximize the value of the reallocated spectrum by increasing the worth of the spectrum rights conveyed to terrestrial licensees and by allowing the sale of a larger amount of spectrum.

The ability to implement a band plan as proposed by AT&T is a consequence of the technical findings by Commscope presented in the *AT&T May 23 Ex Parte*. Commscope found that the out-of-band emissions from 5G base stations, and therefore the ability to meet the protection threshold for FSS systems adopted by the Commission, depend on the filter roll-off from maximum EIRP of the base station and filter roll-off of the earth station filters that CBA proposes to install.¹⁶ AT&T suggested that the FCC solicit technical input from the relevant manufacturing communities to validate, on the record, the protection thresholds for earth stations, the ability of 5G base stations to meet the proposed emissions criteria, and the performance of FSS receive filters.¹⁷ That input will dictate the size of the Adjacent License band and, therefore, the Unrestricted Band. AT&T looks forward to reviewing that input in response to this *Public Notice*.

AT&T also noted that its review suggested that the Commission should solicit further input from FSS operators, FSS users, potential terrestrial mobile entrants, equipment

¹⁵ *Id.* at 4-5.

¹⁶ *Id.* at 6-10.

¹⁷ *Id.* at 10.

manufacturers, and other stakeholders on a number of topics that hold the potential for unlocking more capacity, or streamlining coordination, in the C-band. AT&T urged the Commission to:

- ***Investigate less restrictive alternatives than protecting a 150-meter radius around all registered earth station locations.***¹⁸ AT&T found that creating a broad, 150-meter coordination zone around each earth station magnified the burden of interference calculations. More importantly, it increased the number of impacted earth stations in a manner wholly disproportionate to the benefit, which seems to be protecting the earth station operators' right to relocate their facilities in a very localized area—a benefit they may never utilize and protection that may be unnecessary even if they do.
- ***Develop a more detailed record on the satellite viewable arc required for FSS C-band operations post-transition.***¹⁹ Again, AT&T's analysis suggested that coordination results were identifying deployments as problems caused by the coordination algorithms protecting satellites that did not exist—false positives. AT&T believes that more geographically sensitive and satellite-aware coordination could reduce the false positives, which would ease coordination without decreasing the protection afforded to FSS users. AT&T also suggested soliciting input on whether opportunities may arise for repacking post-transition users in a way that facilitates co-existence.
- ***Investigate further the spectrum needed for, and operational requirements of, satellite earth stations that will remain in the portion of the band reallocated for terrestrial mobile operations and the large 150-kilometer coordination zones for those stations.***²⁰ Because the proposal to grandfather FSS facilities co-channel with terrestrial operations eliminates the ability of licensees to mitigate interference through base station transmit filters or earth station receive filters, the consequence of such grandfathering is the creation of massive exclusion or coordination zones. In view of the disproportionate impact of these systems, AT&T has urged a review of the operational requirements of the networks using these facilities.
- ***Determine a more appropriate user device out-of-band (“OOB”) emissions limit than the mask proposed by the CBA.***²¹ The *AT&T May 23 Ex Parte* also observed that adoption of the CBA-proposed emissions mask for terrestrial user equipment (“UE”) would seriously impair the deployment of 5G services in the C-band. These concerns, more recently echoed by Charter Communications,²² were also previously voiced by Qualcomm, which stated that the CBA's proposed mask “limits would require massive

¹⁸ *Id.* at 11-12.

¹⁹ *Id.* at 12-14.

²⁰ *Id.* at 14-16.

²¹ *Id.* at 16.

²² *ACA Coalition Proposal* at 7-8.

reductions in mobile transmit power levels and thus cripple U.S. deployment of 5G technology in this band,” as well as “destroy any economies of scale and any worldwide harmonization for devices that use this band.”²³ AT&T believes it is imperative to develop a UE emissions mask that is appropriate for a consumer mobile device for C-band spectrum to meaningfully contribute to 5G deployments.

At bottom, AT&T’s *ex parte* was designed to encourage all interested stakeholders to closely collaborate to reach consensus where possible regarding technical criteria governing coexistence between mobile wireless 5G deployments and FSS (*e.g.*, comparing modeling and testing parameters to facilitate better spectrum utilization), while protecting incumbent users of FSS in the upper portion of the C-band. AT&T looks forward to reviewing the comments in response to the *Public Notice* with that in mind.

One final technical item that has been implicit in AT&T’s filings, but warrants emphasis here, is that C-band outcomes need to be definitive to permit industry planning to move forward in a rational manner.²⁴ In other words, the Commission should determine how much spectrum can be reallocated—and the timetable for that spectrum to be put into use—and strictly adhere to those deadlines instead of deferring a portion of the band to a later rulemaking proceeding. When spectrum in a band is metered out in dribs and drabs, it creates standards-setting problems and therefore raises the potential for interoperability issues down the road.²⁵ It may be true that the actual availability of reallocated spectrum for its new use might vary in time for different blocks or regions. The determination of how much spectrum in total will ultimately be reallocated and auctioned, however, must be made in a single decision at the outset (with any

²³ Reply Comments of Qualcomm Incorporated, GN Docket 18-122 at 2 (filed Dec. 11, 2018).

²⁴ Reply Comments of AT&T Services, Inc., GN Docket No. 18-122 at 8 (filed Dec. 11, 2018) (“*AT&T Reply Comments*”).

²⁵ The FCC allocated and licensed the AWS band in several segments at different times, which is partially responsible for the four 3GPP band classes used domestically in the that spectrum range.

varying availability dates by block and/or geography spelled out in the rules). Such certainty is indispensable for enabling organizations like 3GPP to proceed with standards work without creating different band classes for adjacent spectrum—uniformity that is essential for achieving maximum economies of scale and avoiding consumer devices with different band compatibility for what is essentially the same spectrum.

III. THE ACA/CCA/CHARTER FIBER NETWORK PROPOSAL REQUIRES FURTHER STUDY

The *Public Notice* also solicits comments on a proposal by ACA/CCA/Charter that promises the reallocation of over twice as much spectrum as CBA’s proposal—a total of 370 MHz or more—by creating fiber networks that would replace multichannel video programming distributors’ (“MVPDs”) use of C-band FSS receive stations to access video content. The ACA/CCA/Charter plan contemplates that these fiber networks—along with incentive payments (in amounts to be determined) for incumbent licensees and other participants in the FSS C-band transmission ecosystem, both terrestrial and satellite, for involvement in the switch to fiber—would be funded by the would-be terrestrial licensees. As discussed below, although the proposal raises interesting questions regarding the ability of fiber solutions to meet the commercial and operational needs of content distributors, like WarnerMedia, and MVPDs, the proposal also raises substantial questions.

For one thing, the ACA/CCA/Charter proposal appears to contemplate a complete re-engineering of a national industry with multiple stakeholders and, as such, presents multiple challenges that would need to be clarified on the record and opened to public comment. Most importantly, the ACA/CCA/Charter proposes to impose one technical solution—fiber—for an entire industry—the video content programming and distribution sector. No subset of stakeholders—whether earth station operators, terrestrial facilities owners, or satellite service

providers—should force technology choices upon the entire ecosystem. Ultimately, a reallocation framework must be broad enough that all impacted stakeholders retain control of their technology choices. In particular, those who use C-band FSS services today should have the option to continue to use the C-band—recognizing that the frequencies allocated for satellite use in the C-band may be reduced. For example, users could reasonably determine that implementation of more efficient video compression technologies would reduce transponder demand without compromising the service quality and reliability their customers expect, and they should have the option to adopt those compression technologies while continuing to take advantage of the reliability advantages of C-band FSS.²⁶ Other users might determine that switching to fiber or Ku-band (or some combination of all three) meets their service quality and reliability needs, and they should also be free to implement those arrangements. Market participants should retain the autonomy to determine what makes them “whole” rather than having the FCC dictate the new market structure.

The ACA/CCA/Charter proposal also raises complex issues from the perspective of prospective auction participants. Ensuring that transition costs are fully funded will require each incumbent to accurately estimate its transition costs in accordance with its chosen delivery method. These costs must be aggregated to understand how much revenue an auction must generate to close successfully. If the new licensees are to cover these costs, the aggregate costs should be allocated to each license offered in advance of the auction using the same proportions that would be used for upfront payments—a failure to specifically enumerate costs would cloud license values, which could result in bidders shading their bids to compensate for uncertainty. The quantification of the costs of the ACA/CCA/Charter proposed network, especially

²⁶ See Comments of AT&T Services, Inc., GN Docket 18-122 at 11 (filed Oct. 29, 2018).

considering the uncertain participation by market participants, thus creates a substantial financial hurdle to a successful auction.

As a final matter, AT&T opposes any suggestion by ACA/CCA/Charter that a C-band auction should impose an auction-specific spectrum aggregation cap. First, there is no reason that C-band spectrum should be a separate input spectrum market from other flexible use terrestrial mobile spectrum. As, the Commission has done with other spectrum licensed for mobile broadband operation, the availability of C-band spectrum should be factored into the total input market and the screen for competitive review adjusted upwards by 1/3rd of the newly available spectrum. Second, there is no reason for the Commission to impose any spectrum aggregation caps.²⁷ The Commission should use the new spectrum screen in connection with its case-by-case analysis to determine whether a given aggregation is likely to harm competition.

IV. THE COMMISSION SHOULD NOT APPROVE BAC'S REQUEST TO GIVE AWAY VALUABLE C-BAND SPECTRUM

Consistent with its prior opposition to the introduction of P2MP services in the FSS band,²⁸ AT&T continues to believe that, in view of the multiple P2MP deployment options available, acceding to BAC's request for free C-band spectrum would be poor spectrum policy. There is no bar to implementation of P2MP systems in the reallocated portion of the C-band under a flexible use regulatory scheme, so P2MP proponents could secure spectrum in this band at auction or through secondary market mechanisms. By the same token, to the extent that terrestrial wireless services, fixed or otherwise, could coexist with satellite use in the portion of

²⁷ The Commission has long disfavored rigid "caps," concluding that "the competitive objectives of the spectrum cap 'can now be better achieved in the context of secondary market transactions through case-by-case review, properly performed,'" Policies Regarding Mobile Spectrum Holdings, *Report and Order*, 29 FCC Rcd 6133 (2014).

²⁸ *AT&T Reply Comments* at 25-27.

the C-band reserved for FSS, the FCC should auction those valuable rights, not give them away.²⁹

Just as importantly, the proponents of P2MP systems in the C-band have not articulated a need for additional spectrum. First, Wireless Internet Service Providers already have access to over 650 MHz of unlicensed spectrum.³⁰ Second, while other mid-band spectrum such as CBRS and 2.5 GHz have limitations regarding deployment of wide-area mobile 5G networks,³¹ those other bands appear ideal for local P2MP systems. CBRS, for example, offers small license areas, free access (and, if needed, priority access), and flexible regulations that would be ideal for deployment of P2MP systems, especially in the lower density markets that seem to be envisioned by BAC. And, while Sprint's dominance in the 2.5 GHz band limits the potential for other providers to achieve the necessary geographic scale to deploy wide area networks in that band, many P2MP systems are inherently local and are not required to support roaming or low cost consumer handsets. In fact, P2MP systems were one of the uses originally envisioned for the EBS and BRS bands.³²

V. CONCLUSION

AT&T appreciates the Commission's effort and rigor in this proceeding. C-band spectrum is unique in terms of both breadth and importance for 5G (and the global implications of 5G leadership). Although the Commission must move quickly, it must also move with

²⁹ *Id.*, at 25-27.

³⁰ *Id.*, at 6 n.20.

³¹ *See, supra*, at 4.

³² *See, e.g.*, Revisions to Part 21 of the Commission's Rules regarding the Multipoint Distribution Service, *Second Report and Order*, 13 FCC Rcd 13542, 13544 (1998) (noting Multipoint Distribution Service (the predecessor of BRS) licensees were authorized to offer point-to-multipoint services).

appropriate diligence to ensure that this opportunity is maximized. Importantly, the Commission must exhaust all possibilities to achieve optimal efficiency in the band, while being mindful of the impact of a massive reallocation on C-band FSS users and the key industries they support. AT&T looks forward to reviewing the technical record in this proceeding to achieve those ends. At the same time, AT&T questions whether the ACA/CCA/Charter proposal is feasible, and outright opposes BAC's request for free spectrum.

Respectfully Submitted,

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